under the national health-insurance plan. In many cases fees are waived. Children up to age 15 have their teeth cared for at no cost. Even the alcoholic is watched out for. The Government pays for hostels where he can live under supervision while continuing to work at his job.

Vitamins free: There are many other Swedish welfare benefits. For example, the Goverment makes a flat, tax-free payment of $80 a year to parents for each child under 16. Children also receive free health supervision up to school age in national child-welfare centers, and, during school years, from school doctors and nurses. If a child proves difficult to bring up, free advice may be obtained from child-guidance clinics. The State pays costs of vitamins and inoculation against disease.

Children under 14 are given vacations which cost the parents nothing if their income is low enough. These children may travel free once a year to any part of Sweden and back. They may attend holiday camps or visit private homes outside their home district, with their subsistence paid by the Government.

Day nurseries and nursery schools are available to preschool children at fees which even those of minimum income can afford. Children receive free meals during school hours. And, if a child comes from a poor family, there is a clothing allowance.

Study allowances are awarded for children in secondary and vocational schools who have to live outside their home districts to receive the training they need. These allowances include maintenance grants and traveling expenses.

In the later school years, students can obtain state scholarships for short training courses in vocational fields. University education is available on state study loans of up to $700 a session.

Some financial aid from the Government is assured for all children from birth through the years of university education. But Government social benefits begin for the Swedish child even before he is born.

"Rewards" for motherhood: Before giving birth, a working mother-to-be is paid $3 a day by the state for a maximum of 90 days. At the birth of a child each Swedish mother, regardless of her financial status, receives a cash grant of $54. For women of low incomes, the state pays an additional $120 at the birth of a child.

There are many other benefits for mothers besides such cash grants. No matter what her income, the Swedish mother receives free services of a trained midwife before, during, and after the birth of her child. She gets hospital care during confinement at no cost. Prenatal clinics provide free examination and consultation.

While her children are growing up the Swedish mother continues to receive other state benefits. A housewife with at least two children under 14 and whose taxable income meets a certain standard may take a free vacation trip to any place in Sweden. The Government also subsidizes holiday homes at which vacations may—but do not have to—be spent. And in some cases cash grants are provided to housewives for vacations.

Special subsidies are paid to widows and widowers with children. Children left fatherless because of industrial accidents receive direct financial support from the Government. Widows of industrial-accident victims also receive special aid.

Loans at 3 percent. In the field of housing, there are not only rent allowances but fuel allowances for low-income families. For those who want to own their own homes a Government allowance is granted where money borrowed from a bank costs more than 3-percent interest. And the Government itself makes additional housing loans at 3-percent interest. Part of such a loan is free from payments on principal or interest for 10 years. At the end of the 10 years, the homeowner may be excused from repaying the loan at all, if the Government agrees.

Beyond all this, the Swedish Government extends its social-welfare benefits into such fields as unemployment insurance, aid to military-service draftees, and free legal advice. Almost every problem the human being encounters, financial or otherwise, is, at least in part, the responsibility of the Government under the Swedish system of social welfare.

Yet social ills are increasing under Sweden's cradle-to-grave welfare system. The country's suicide rate is climbing alarmingly. Robberies and burglaries have doubled in the last 10 years. Juvenile delinquency figures have tripled. Arrests for drunkenness have nearly tripled.

Some Swedish psychiatrists have suggested that many suicides are committed over marital or other emotional problems because the welfare state has provided such extensive cushioning that some people just cannot face up to personal emergencies.

Now there are signs that a good many Swedes—particularly young people starting out in business and the professions—are turning away from such extensive "Government paternalism." Also building up is a feeling that the workingman, paying more and more taxes to receive Government benefits, is just "taking money out of one pocket and putting it in another," as one political leader here describes it.

Inflation headache: Some economists are warning that the welfare state's built-in inflation could take Sweden to the point where it will have to devalue its currency.

In the face of skyrocketing costs, substantial tax increases and mounting budget deficits, you can get expert political opinion that the Social Democrats—architects of the welfare program—are likely to be voted out next September.

As a result of all these things, there is widespread feeling in Sweden that the welfare state finally has grown too big for the country's own good. But that point was not reached until the whole setup grew far beyond anything yet undertaken in the United States.

Editor Discusses the Cuban Sugar Situation

EXTENSION OF REMARKS
OF
HON. VICTOR L. ANFUSO
OF NEW YORK
IN THE HOUSE OF REPRESENTATIVES
Tuesday, March 1, 1960

Mr. ANFUSO. Mr. Speaker, on February 22, 1959, I introduced a bill, H.R. 10570, which provides for reducing Cuba's sugar quota by the amount it exports every year to Soviet Russia and to allocate this amount among the sugar-producing countries of the Western Hemisphere. I am convinced that this action on our part would remove an important economic prop from the Castro regime and would make it clear to Castro what we think of his flirtations with the Communists.

Since I introduced my bill there have been a number of favorable comments on my bill in letters, newspaper stories, and articles. Among the latter is an article by William Randolph Hearst, Jr., editor in chief of the Hearst Newspapers, which was published in the New York Journal American on Sunday, February 28, 1960, in his "Editor's Report."

Under leave to extend my remarks, I wish to insert into the RECORD that part of Mr. Hearst's report in which he discusses the Cuban sugar situation and what our attitude should be:

EDITOR'S REPORT

(By William Randolph Hearst, Jr.)

Another thing we all ought to think about is what to do about Castro's Cuba, and in particular the sugar quota under which we have been buying approximately half of the Cuban crop at premium prices 2 to 3 cents above the world market rate.

Two bills that have been introduced into Congress—one by a Democrat and the other by a Republican—are similar in purpose and reasonable in intent.

In the House, Representative VICTOR L. ANFUSO, New York Democrat, is sponsoring a bill that would cut U.S. buying of Cuba's sugar by the amount she exports to Russia under the new trade-barter deal. This is 1 million tons a year over the next 5 years. Mr. ANFUSO proposes that this amount be allocated among other sugar-producing countries in this hemisphere.

In the Senate, a bill by Senator BARRY GOLDWATER, Arizona Republican, proposes just about the same thing.

So many people are genuinely perturbed by the turn of events in Cuba that it occurred to me it would be of interest to find out how the sugar quotas happened to be established and for what reasons. Without becoming too technical or getting into economic calculus, the research came out as follows:

Until 1934 this country had a tariff on raw sugar of 2 cents a pound to help U.S. beet sugargrowers and Louisiana cane sugargrowers. This also helped and caused an increase in sugar production in Hawaii, Puerto Rico, and the Philippines, duty-free U.S. dependencies.

The quota system was born of the depression. In 1934 the Secretary of Agriculture was directed to establish shares (quotas) for domestic and foreign production on the basis of historic trade patterns. There were three objectives: to protect the domestic sugar industry, to assure adequate supplies at stable prices and to promote our export trade by paying foreign producers above the world price and supplying them with dollars to buy from us.

In the assignment of foreign quotas, Cuba has been placed in a privileged position, due to historical ties of friendship and the fact that Cuba was a good customer of our goods and a considerable part of its sugar industry was American owned.

As the Sugar Act now operates, mainland U.S. producers, Hawaii, the Philippines, Puerto Rico, and the Virgin Islands get fixed quotas totaling 5,424,000 tons—based on an estimated basic need of 8,350,000 tons. The Philippines, however, since it gained independence is now on a rising tariff scale.

Cuba gets a fixed quota of 96 percent of the difference between the estimated basic need and the fixed domestic and Philippine quota. All the other countries divide the remaining 4 percent of the difference.

In actual figures Cuba's fixed quota is 2,808,000 tons, and when requirements above the basic need are added, its assignment this year is 3,119,000 tons. In addition, it enjoys a 20 percent tariff differential. The duty on Cuban sugar is 50 cents a hundred pounds compared to 62½ cents a 100 pounds for full-duty countries.

The big point I want to establish out of all this background is that Cuba's privileged position has been based on both friendship and self-interest.

Friendship has gone in the violence hostility of Castro's government toward our country.

Self-interest also has gone in the Castro government's confiscation of American property, in the process of Communist nationalization of all property and industry going on there, and in the barter deal with Russia, with its invitation to Communist infiltration.

Every American to whom I have talked recently in my travels about this country agrees that we should not meekly and passively take Castro's anti-American acts and provocations any longer. This opinion was hearteningly shared by some of the leading Latin American statesmen and businessmen the Hearst task force met in our just-concluded trip.

Therefore, it seems to me the proposals of Senator GOLDWATER and Representative ANFUSO should be enacted into law.

Let's start by transferring at least that portion of the Cuban sugar quota equal to the amount in Castro's Russian deal to Latin American countries that are our friends—Peru, Brazil, Mexico and others that produce sugar and won't insult us for the privilege of selling it to us.

They will sincerely appreciate and be grateful for this move—not heap abuse upon us for our consideration.

Besides, 96 percent of our business to Cuba, and only 4 percent to all our other friends never did make sense.

Now is a perfect time to correct that cockeyed situation.

Conquest of the Ocean World From Top to Bottom

EXTENSION OF REMARKS
OF
HON. JAMES C. OLIVER
OF MAINE
IN THE HOUSE OF REPRESENTATIVES

Tuesday, March 1, 1960

Mr. OLIVER. Mr. Speaker, on Thursday, February 18, I addressed this body with a lengthy, detailed informational speech, referring to the Soviets' planned expansionist activities in all the many broad phases of oceanography over practically every ocean of the world.

By the way of contrast, I referred to the relatively meager programs which are being authorized and funded by the United States to meet this ever-increasing expansion by the Communist nations.

In order that the RECORD may be kept in balance through information of some of our activities in this vital area of oceanography, I am pleased and privileged to incorporate, herewith, the foreword as written by Richard Vetter, Executive Secretary, Committee on Oceanography, National Academy of Sciences, to the following feature articles appearing in February issue of Navy, the magazine of seapower.

FOREWORD

(By Richard Vetter, Executive Secretary, Committee on Oceanography, National Academy of Sciences)

Our Nation is excited by, and concerned with, the conquest of outer space. This is as it should be for outer space is exciting and important. Less obvious, but of more practical importance, potentially as exciting—is the conquest of our "inner space"—the oceans. Both are important to our Nation's future. However, we must not overlook one while pursuing the other.

This feature presentation of the Navy League's magazine states this case is concise and imaginative terms.

(EDITOR'S NOTES. Members of the Committee on Oceanography of the National Academy of Sciences are not only in full accord with the position of this presentation and unhesitatingly emphasize that "man's knowledge of the oceans is meager, indeed, when compared with their importance to him." This is highlighted in their report to the Committee's Government sponsors, namely, Office of Naval Research, Bureau of Commercial Fisheries, the Atomic Energy Commission and the National Science Foundation. The same has been conveyed to the Congress.)

The report contains features which I believe are unique. It does not call for a crash program requiring an abrupt and unsettling expansion of oceanographic research activity such as was forced upon us in the space field by the Russian sputnik. A gradual replacement of obsolete ships, and an orderly increase in facilities and scientific manpower is proposed. Unlike many advisory committee reports, it is sprinkled liberally with dollar signs to indicate the amount of effort required in each of several fields to maintain a well-balanced program.

The response to the report in the Government agencies (particularly the Navy and the National Science Foundation) has been most gratifying; and that of Congress beyond our fondest hopes. (Senator MAGNUSON has introduced a bill incorporating many features of the committee report and Congressman BONNER appointed a special Subcommittee on Oceanography of the House Merchant Marine and Fisheries Committee which immediately began a series of hearings.) Public interest is becoming extensive and sincere.

Why this sudden interest in oceanography? The oceans are a new frontier for man's conquest, but this has always been true; the oceans have always been with us. The new ingredient is modern technology. With new materials: plastics, special steels, aluminum; with new devices; electronic computers, aircraft, deep diving bathyscaphs, stable platforms, acoustic transducers; with new techniques for the collection, telemetry and analysis of data, a host of oceanographic problems have been "whittled down to size." Man's mental and physical capabilities have been magnified immensely and formidable problems encompassing tasks which could not have been attempted a decade ago are now within our reach.

This new frontier and its opening must not escape our attention, for with worldwide expanding consumption of energy, materials, and food; with expanding demands for vast amounts of environmental knowledge upon which costly and vital weapons systems depend; with an exploding world population; many nations are turning to the sea.

At present our critical national need for knowledge of the oceans is for defense. Ten, fifty, or one hundred years hence it may be for food. Whether for defense, food, or commerce, our Nation as it looks to the future must look more and more to the oceans.

CONQUEST OF THE OCEAN WORLD—PART I

FROM TOP TO BOTTOM

As the world's No. 1 maritime Nation, the United States is belatedly beginning to realize it cannot boast command of the breadth of the seas until it also commands them from top to bottom. For here is the last frontier—the dark frontier of another and hidden world. With oceans covering two-thirds of the earth's surface, there remain 300 million cubic miles of water lying beneath us unexplored, unknown.

(The first major effort at a breakthrough into the fathomless depths with all its hazards is currently being undertaken in the Pacific off Guam, where the famed Navy bathyscaph is attempting a 7-mile plunge to the deepest ocean trench in the world. For details see companion piece to this article titled "Descent Into Terra Incognita.")

Man's knowledge of the oceans is meager, indeed, when compared with their importance to him. That's the way the Committee on Oceanography of the National Academy of Sciences puts the proposition. And little wonder. For within the hidden realms of this 300 million cubic mile vacuum may rest our future security scientifically, economically, and militarily.

The sooner we take a serious look at this space beneath us—as seriously as we have been gaping at the outer realm above us—the nearer we will be to really understanding the meaning of seapower to our lives, our well-being, and our safety.

"From the point of view of military operations there is no comparison between the urgencies of the problems of the oceans and those of outer space. The submarine armed with long range missiles is probably the most potent weapon system threatening our security today. It seems clear that the pressures of establishing effective bases, and of protecting ourselves from attack, are relentlessly driving us into the oceans." Thus, speaks the 1959 report of the Committee on Oceanography of the National Academy of Sciences.

And to put the threat of undersea superiority, especially in the Atlantic, even more to the point, the famous 1960 edition of Janes Fighting Ships (London) suggests any war with Russia will be won at sea and from under the sea.

Editor Raymond V. B. Blackman writes: "Russian leaders have stated that in a future war the struggle at sea will be of immeasurably greater consequence than it was in the last war.

"They well realize the vital importance of the positive control of the seas in the grand strategy of Great Britain and the United States and their clear intention is to isolate North America from Western Europe."

The Russian fleet of 400 to 500 submarines, Janes points out, including guided missile and atomic-powered underwater craft, could conceivably wreak great havoc on the 25 million tons of American and 20 million tons of British shipping in the Atlantic.

Projecting the sea picture to 1967, Janes calls attention to the fact the United States will have 75 nuclear-powered subs, 40 of them guided missile craft, and comments: "It may well be that these will become capital ships around which the Navy of the future will be built."

Let's put it bluntly: key to our survival, then, would seem to lie in the ocean depths. Thus instead of meager drop-by-drop financing for basic ocean studies, it is recommended we spend $651 million over the next 10 years. Even that in comparison to what we are spending in moonshooting and outer space exploration is regarded as niggardly by those who understand the peril confronting us if the U.S.S.R. ever attains the upper hand beneath the seas.

Echoing this statement and the flat opinion of the Academy of Sciences is famed Navy scientist and inventor of the Momsen submarine lung, Vice Adm. C. B. Momsen, U.S. Navy (retired), who holds that undue emphasis currently is being placed on the invasion of outer space and is out of all proportion to the grim realities immediately facing us here. Our future, he states, is on the earth, in and below the ocean.

Admiral Momsen, in concert with other naval intelligence and with the top scientists of the day, leans to the opinion that

he who controls the seas—not just coast to coast but from top to bottom—can conceivably control the world. In a word, the threat to the United States, with the greatest exposed coastline of any country in the world, is not from the air but from beneath the oceans. If there ever is another Pearl Harbor or sneak attack, that attack will come from a space where a major surprise is possible, namely, from thousands of feet down under.

Our own Polaris weapons system and nuclear subs are the tipoff, very likely to be matched and improved upon by Russia, which, at the moment, is regarded as far ahead of us in the all-important field of oceanography through a crash exploration program. To begin with, the Russians have already built and are operating the first oceanographic submarine, the *Severianka*, which has been operating in the arctic. It is common knowledge that surface icebreakers are of limited value compared to properly equipped submarines.

The submarine-launched missile combined with mobile fleet domination on the surface represents the ultimate in military offensive force.

There is a distinct advantage in being able to cruise, hide, find harbor, and fight for extended periods of times at depths of 2½ miles or more beneath the surface. Seven miles is the ultimate objective, where the pressure is 8 tons per square inch.

Provided the *Nautilus* and her ilk of nuclear sister subs could withstand these deep-ocean pressures, we would have this supreme instrument and exploration of the depths could be rapid. But we do not. That's where basic ocean study or oceanography comes into find out about pressures, depths, mountain ranges, long plateaus, sound detection, and currents that sweep back and forth at 75 miles per hour.

A whole system of maneuvers, communication, sonar detection, and probably even new weapons for undersea fighting will have to be developed before there is any real conquest of the seas. But these things will come as surely as Russia's Sputnik I. The question is, who will be first with the most? And what are we doing to meet this challenge? The answer is, precious little. With billions scheduled for missiles, rockets, and for the outer space program—as important as these may be—Congress has been penurious.

Marine science in the United States presently is the concern of only a few hundred persons, led by such dedicated men as Dr. Maurice Ewing, director of Columbia University's Lamont Geological Observatory; Dr. C. O. D. Iselin of Woods Hole Oceanographic Institution, Dr. Robert Revelle of the Scripps Oceanographic Institute on the Pacific coast, and those in the Office of Naval Research under Adm. Rawson Bennett and those in the U.S. Navy's Electronics Laboratory.

What do we require to explore fully the hidden continent so that we can turn it to our advantage scientifically, economically, and militarily? Immediately, we need ships built and geared to this specialized study. Right now the United States has 11 ships, many of them makeshift jobs ill suited to play any real part in rolling back the water curtain to find what is there in the way of plantlife, fish, minerals, and petroleum. The National Science Foundation has just awarded $3 million for an all-weather science ship as the forerunner to a program calling for 22 ships by 1970.

The oceanographers advocate, however, much more in the line of equipment. We need bathyscaphs that can descend without harm to the oceans' ultimate depths of 37,000 feet. We need anchored towers and floating buoys.

Better than a ship also would be vertical floating tubes. Dean Athelstan Spilhaus of the Institute of Technology, University of Minnesota, draws this Jules Vernish picture:

"These vertical floating tubes, will be hundreds of feet long, cigar like in shape, heavy on the bottom and projecting a few feet into the air at the top. These will be moored in one place. The men in this tall tubular buoy floating in the sea will be able to live, watch, and record the physical and biological interplay never before observed. Initially we may use submarine hulls standing on end for these buoys, and in the not-too-distant future permanent stations of this kind will be scattered all over the oceans. Not only will they be useful for understanding the sea but they will be mid-ocean lighthouses and emergency shelters for submarine or surface ocean travelers and fishermen, and represent a watery dew line or distant early warning system against subterranean attack.

"As well as these anchored buoys, there will be manned, drifting buoys traveling slowly with the currents, and for each manned buoy, drifting or moored, there will be numerous unmanned ones at surface, mid-depths and bottom, sending what their instruments measure automatically to the manned stations to be retransmitted by radio to great central storage computing and analysis centers, either on land or at sea.

"These networks of buoys in and on the sea will not replace surface oceanographic ships but will, rather, increase the need for them because the buoys will have to be supplied, attended, and their data collected," Dr. Spilhaus points out. "Aircraft flying above the sea also will be used to gather the information about the oceans. From an aircraft at high speed a view of the ocean can show currents, wind streaks, boundaries between water of different kinds, and concentration of marine life. Also, the buoys in the sea can transmit their data from the depths first by sound to the surface and then by radio to an aircraft flying above them. The airplane could question many buoys at the same time and get a synoptic or simultaneous bird's eye picture of the situation," Dr. Spilhaus continues: "The airplanes, too, can drop measuring instruments which, as they sink down into the depths, transmit the conditions of the different layers through which they pass. We may expect to see large mother ships letting down bathyscaphs and sending up helicopters to gather the total data that we will need about the sea. Not only these special vehicles for oceanographic research but also ocean liners and fishing vessels can be equipped with continually recording instruments which, without interfering with their normal business, can chart temperatures, salinities, abundance of plant and animal plankton, and fish populations. Only by the use of all of these can we hope to obtain the world map of the huge oceans relating their physical conditions to the distribution of life in them. This map will give us the basis to understand the complicated relationships that will enable us to make useful predictions for fisheries, for ocean travel, for underwater communications, and out of it will come many other uses of ocean forecasting."

Obviously—getting back to our "first line of defense"—both the offensive and defensive submarine fleets have a tremendous stake in this subterranean mapping. Here is a vast limitless battlefield and no reconnaissance maps or other important intelligence with which to guide our antisubmarine warfare and/or our retaliatory units.

Since the world beneath the sea is the operating area of the true submarine, detailed information about this environment (previously of minor consequence to surface ships and aircraft) assumes tremendous importance to the submarine.

Just as there are on land, networks of radars which plot aircraft positions to prevent collisions, it cannot be too long before there will be a counterpart of these criss-cross networks in the sea. This is to say, there will be submarine beacons radiating sound beams for the guidance of underwater ships.

Specifically, Dr. Spilhaus makes this prediction:

"Sound receivers must be coupled together in a vast underwater spider web of millions of miles of cables which, like our radar surveillance in the air space, can keep track continuously of normal comings and goings, yet single out any stranger in our midst. To identify friend from foe is one of the most difficult underwater problems the Navy has."

More than that, the Navy itself points out quote simply, "The task of navigating a submarine at high speed and deep submergence without accurate bottom information can be compared with driving a 10-ton truck on the freeway blindfolded."

The problem of locating and identifying enemy submarines at distances beyond the effective range of their weapons is a difficult one. To date the most effective means of locating and identifying submerged targets is by use of sound techniques, called sonar. These techniques involve echo ranging, that is, bouncing a sound beam off a submerged target, or, listening to the noises made by the target.

But in water, sound transmission varies with changes in the temperature, density, and salt content of the water. Temperature differences between water layers present the most critical problem, for the sound beam is reflected or refracted to a varying degree.

Once a submerged object has been detected by the sonar beam, the problem becomes one of identification—is it a whale? School of fish? Friendly surface ship? Or enemy submarine? All give sonar reflections.

In addition, when we listen for target noises we discover that the ocean which has been characterized as a "silent world" is, in fact, anything but. "Actually the ocean is a 'liquid jungle.' Survival depends upon how well we know this environment, and whether, like Tarzan, we can tell the friendly sounds from the unfriendly ones—the monkeys from the tigers," states the Navy Department.

Victory or defeat in future wars may well hinge upon superior knowledge of the seas. One of the vital supporting elements of sea power is oceanographic research. Through this research the Navy will be in a better position to perform its missions under—on—and over the sea.

Our scientific, economic, and military future may likely be locked in the world's oceans. The key to this future lies in study and research in these vast ocean areas. Each of us as an American citizen must be aware of the importance of this last frontier on earth.

Although our small corps of oceanographers and supporting scientists have made a good start on an effective oceanographic research program—"making do" with existing equipment—there is an urgent requirement for new equipment and modern facilities.

We need new ships, and submarines, laboratories and engineering facilities plus trained manpower.

Today we trail the Soviets in numbers, tonnage and quality of seagoing research ships. We also trail in manpower devoted to the job of exploring the seas. Urgently needed then is a clear cut, long range program designed to regain our country's lost leadership in the exploration of innerspace.

Fortunately there is such a plan in the report the Committee on Oceanography of the National Academy of Sciences—National Research Council.

The basic five-point recommendations are as follows:

1. The United States should double its basic research during the next 10 years.

2. The present effort in oceanwide surveys should also be doubled.

3. The support of applied marine sciences, particularly military defense, should be expanded.

4. The Federal Government should assure long range budgetary support.

5. All available facilities, private foundations, universities, industry, and Government agencies should be coordinated in a maximum expanded program.

In support of this national program the Navy has developed its own 10-year program. The Navy's program calls for increased emphasis in the following areas:

"Basic and applied research: The Navy is expanding support of these two types of research. They go hand in hand. Through basic research we obtain fundamental knowledge—without thought of specific application. The success of applied research, however, depends upon this fundamental knowledge.

"The Navy program calls for more new laboratory facilities—and financial support for the educaiton of future oceanographers. Increased emphasis in both are basic to an expanding oceanographic program.

"At the present our knowledge of the ocean bottoms is limited to waters 100 miles from shore. Our efforts must be greatly expanded, particularly if we are to meet anticipated military needs. To accomplish this—and other tasks—increased procurement of oceanographic research ships and equipment is being programed.

"The future possibilities of the oceans are limited only by the imagination, awaiting exploitation by men of vision."

CONQUEST OF THE OCEAN WORLD—PART 2

DESCENT INTO TERRA INCOGNITA

Locked in a windowed gondola, 6½ feet in diameter, two men on January 23 looked out from a bathyscaph on a scene none had ever witnessed before, the bottom of the ocean's deepest trench—7 miles below the surface in the Pacific's Marianas.

This record plunge represents the most important breakthrough in the science of oceanography to date. It marks the forerunner to conquest of the Ocean World. Scene of the project (using the famous U.S. Navy bathyscaph built by the Piccards 2 years ago at a cost of $200,000) is a location off Guam in the South Pacific. Called the *Trieste*, the Navy's bathyscaph was piloted by Dr. Jacques Piccard and Lt. Don Walsh, U.S. Navy.

Capt. John Phelps, U.S. Navy Commanding Officer of the Navy Electronics Laboratory at San Diego, which directed the dive, estimates the pressure on the *Trieste* at 7 miles down was approximately 16,883 pounds per square inch. The full plunge required many dives before bottom was touched, according to Franz Kurie, technical director of NEL.

Destined to be future pilots or hydronauts will be the following four men: Dr. Andres Rechnitzer, Dr. Jacques Piccard, Lt. Don Walsh, U.S. Navy, Commanding Officer of the *Trieste* and Dr. Robert S. Dietz, consultant and marine geologist.

The two hydronauts selected sat in cramped quarters in virtual darkness and were clothed against temperatures close to the freezing point. Conservation of electric battery power called for the inside blackout which was relieved by pinpoint lights on the instrument panel while outside huge search lights played on the eerie scene around the *Trieste* for observation and photography.

The dive is important to the development of antisubmarine warfare devices against the Soviet's huge submarine fleet. The dive was no mere stunt. On the contrary the dive, with the aid of photography and sensitive instruments to check life and currents at the seafloor level, is designed to obtain information for development of the nuclear submarine. It also will represent a giant stride in oceanographic research, and will point the way to further and larger explorations at various areas throughout the world.

The gondola of the *Trieste* is supported by a 58-foot float of steel three-eighths of an inch thick. The float contains 30,000 gallons of high octane gasoline providing buoyancy and to offset the severe pressure at maximum depths. As the gasoline contracts, sea water will flow into the compartments creating an even pressure over the entire steel hull.

The bathyscaph also will be loaded with 13 tons of smal iron pellets as ballast. These can be dumped at the rate of 1 ton every 3,000 feet to control the speed of descent. Fully loaded the *Trieste* weighs 75 tons, empty about 30 tons.

As we know, Mr. Speaker, this epochal feat was appropriately recognized by our Government when President Eisenhower decorated Lt. Don Walsh, U.S. Navy, and Jacques Piccard. It may be somewhat anticlimatic now, but to complete the RECORD, the following information should be available to point up the critical and vast scope of this accomplishment. This is really one of America's sputniks of the sea. If we are to survive in the great American tradition of leading the world, it is urgent that we apply our technological and scientific resources to the realization of more and more oceanographic progress:

RECORD PLUNGE IN BATHYSCAPH TO OCEAN'S DEEPEST

An attempt to descend more than 7 miles into the deepest depression in the earth's surface will be made early this year by a team of Navy scientists, it was learned yesterday.

Two hydronauts still to be selected, will make the record-smashing dive in the Navy's bathyscaph, *Trieste,* in the Pacific Ocean's Marianas trench—or Challenger Deep—about 200 miles southwest of Guam. The floor of the trench, estimated at 37,500 feet below the surface by the Navy, is the lowest point in the world.

If successful, the dive will not only more than double the previous undersea diving record of 18,600 feet, set last month by the *Trieste,* but will provide information for the development of nuclear submarines.

TEST DIVE BEGINS

The diving, under the direction of the U.S. Navy Electronics Laboratory, San Diego, Calif., and Dr. Andreas B. Rechnitzer, scientist in charge of the bathyscaph project, will begin the first 2 weeks of January if the weather is favorable. Shallow test dives have already begun off Guam, and anywhere from 3 to 10 plunges will be necessary before the expected maximum depth is reached, according to Dr. Franz Kurie, technical director of the NEL.

The two men who will sit inside the bathyscaph's cramped gondola in darkness for 11 hours or more will be selected from the following four: Dr. Rechnitzer and Jacques Piccard, who together piloted the *Trieste* to its 18,600-foot dive (Mr. Piccard designed and built the $200,000 submersible 2 years ago with his father, Auguste); Lt. Don Walsh, officer in charge of the *Trieste*, and Dr. Robert S. Dietz, project consultant and marine geologist.

THE BATHYSCAPH

The main structure of the *Trieste* is a 58-foot float of steel three-eighths-inch thick. Loaded with 30,000 gallons of high-test gasoline, the float provides the buoyancy for the gondola attached to its under side. At 37,000 feet down, the pressure on the hull will be more than 8 tons per square inch, but as the gasoline contracts, sea water will flow into the compartments, creating an even pressure all round.

In addition, the bathyscaph carries 13 tons of small iron pellets about the size of BB shot as ballast. These can be released at rate of 1 ton for each 3,000 feet of descent to control the speed of dive. Empty, the *Trieste* weighs 30 tons, but it picks up an additional 45 tons when fully loaded.

Everything is run by batteries, the meters for measuring water current, lights for photography, echo sounders, salt and oxygen content and temperature measurers, underwater sound telephone and bathometers. To conserve the limited supply of power the sitting in the Gondola 6½ feet in diameter, will descend in darkness. Only the instrument dials will be illuminated.

What will the hydronauts find when they hit bottom?

"We have no idea," Dr. Kurie said. "But we usually find more life than we expect. One thing for sure, though, it will be very cold and very dark." He estimated the temperature at just a few degrees above freezing at 37,500 feet. The men will have only the heat of the instruments and warm clothing to keep them warm, again because of the power shortage.

WHAT MAY BE LEARNED

Dr. Rechnitzer outlined the reasons for the dives. They are not to set a new undersea diving record. "Direct observations of the biological and physical phenomena of the sea, a study of the behavioral responses of organisms to light and sound and an examination of the water currents near the sea floor are among the objectives," he said.

Among the so-called "fringe dives" will be improvement of present day—and future—ship construction techniques.

"It is reasonable to assume that submamines will, some day, be operating in depths measured in thousands of feet instead of hundreds," Lieutenant Walsh pointed out, "and the experimental nature of the *Trieste* allows more freedom of engineering change than would be practicable on a mass-produced naval vessel."

"What Brotherhood Means to Me" as Observed by Rotary, Lions, Kiawanis, Exchange, and Optimist Clubs of Downey, Calif.

EXTENSION OF REMARKS

OF

HON. CLYDE DOYLE

OF CALIFORNIA

IN THE HOUSE OF REPRESENTATIVES

Thursday, February 25, 1960

Mr. DOYLE. Mr. Speaker, by reason of unanimous consent heretofore granted me so to do, I present the text of a front page news item appearing in the Downey Leader, for Monday, February 22, 1960, one of the most widely read newspapers in the important city of Downey in the great 23d Congressional District, Los Angeles County, Calif. Because this is Brotherhood Week all over our Nation, I believe that this newspaper story of how this week is being observed by the Rotary, Lions, Kiwanis, Exchange, and Optimist Clubs in the important city of Downey will be recognized as a significant occasion as well as a timely one:

WHAT BROTHERHOOD MEANS TO ME

Downey service clubs will celebrate Brotherhood Week tomorrow at a joint